

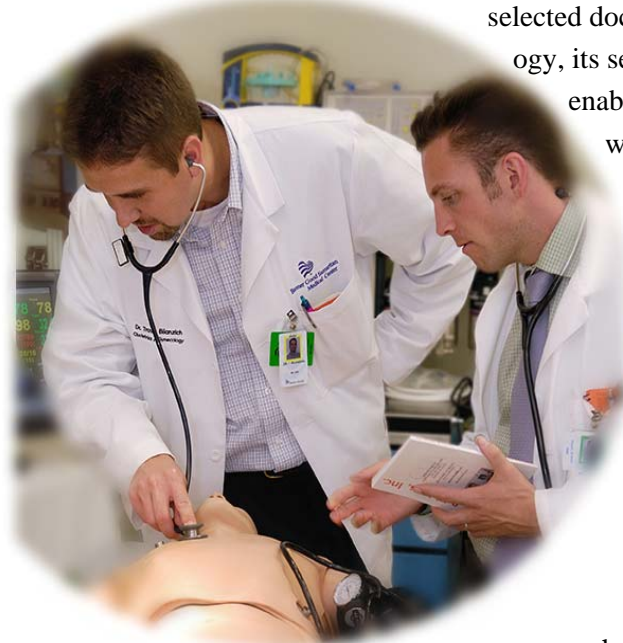
Medical Education: New Territory in Research

Author: Jennifer L. Lower, Research Director, Medical Education, M. Div.

Trauma Services, the Surgical Residency Program, and the Simulation Education and Training Center are entering new territory in research. In collaboration with Arizona State University, a project involving cognitive complexities has been proposed. This proposal, funded by the James S. McDonnell Foundation's award to Arizona State University, is titled, "Cognitive Complexity and Error in Critical Care." The research team will bring together an interdisciplinary team of cognitive psychologists, critical care clinicians, simulation experts, biomedical informaticians and complex systems scientists to develop a holistic research effort dedicated to modeling of complexity and errors in medical environments.

There are two objectives for this project:

1. Design, development and initial evaluation of technology that can aid in capturing clinical interactions and decision making process. This research to be conducted in Simulation Education and Training (SimET) Center, will develop a radio frequency identification based monitoring and tagging system coupled with audio recorders to capture verbal interactions between doctors, nurses and patients. This is primarily technology development and requires only few evaluation trials with



Travis Bilanzich, DO (left) and **James Spangler, DO (right)** are participating in an exercise in the SimET Center.

selected doctors for evaluating the technology, its security and privacy and enabling a proof-of-concept of its working.

2. Complexity modeling of errors. The team's approach to error emphasizes the thought process that underlies collaborative decision making. It is based on the theoretical framework of distributed cognition, which views collaborative work as the product of a cognitive system consisting of human agents, machine agents and representations that exist in the minds of humans, or on physical media.

Team members include Dr. John Ferrara (Trauma Services and Surgical Residency), Dr. Mark Smith (System Director, Simulation Training), Dr. Vimla Patel (Arizona State University), and Dr. Kanav Kahol (Arizona State University), to name only a few. According to one of the team members, "Trauma Services is very excited about the opportunity to participate in the cognitive complexities study. This endeavor represents our initial effort to enter the realm of clinical research, the results of which we expect will enhance the level of care we deliver to our trauma patients as we reach towards Designation as a Level I Trauma Center through the American College of Surgeons committee on Trauma." Cognitive complexities research will encompass trauma, ICU and the SimET Center at Banner Good Samaritan Medical Center.

